What is claimed is:

1. An optical fixed attenuator comprising:

two optical fibers cojoined axially by fusion splicing following deformation of the fiber core and fiber mode field diameter (MFD), wherein the amount of deformation of the fiber core and mode field diameter (MFD) is calculated to achieve a desired splice loss.

2. The optical fixed attenuator as recited in claim 1, wherein the cleaning arc function of the splicing machine is used to produce the deformation of the fiber core and mode field diameter (MFD) in the vicinity of the fiber endfaces so as to be different from the other parts of the fibers prior to fusion splicing.

3. The optical fixed attenuator as recited in claim 1, wherein the prearc function of the splicing machine is used to melt the fiber end faces prior to splicing, wherein the prearc level is controlled to achieve the specific splice loss by deforming the fiber core and mode field diameter (MFD) of the fiber in the vicinity of the end faces of the fibers so as to be different from that of the other parts of the fibers before fusion splicing.

4. The optical fixed attenuator as recited in claims 2 or 3, wherein the amount of the deformation of the fiber core and mode field diameter (MFD) required to achieve the specific splice loss is calculated on the basis of a correlation that exists between the amount of the deformation

of the fiber core and mode field diameter (MFD) in the vicinity of the fiber end faces and splice loss.

5. An apparatus for producing the attenuator splices comprising:

a cleaning arc function which can be controlled to deform a fiber core and mode field diameter (MFD) in the vicinity of end faces of fibers so as to be different from that of the other parts of the fibers before fusion splicing to achieve the specific splice loss.

6. The apparatus as recited in claim 5 for producing the attenuator further comprising:

a means for computing the amount of the cleaning arc discharge required to deform the fiber core and mode field diameter (MFD) of the end faces of the fibers to the desired amount before fusion splicing on the basis of a correlation that exists between an amount of the deformation of the fiber end faces and splice loss, and

a means for adjusting the characteristics of the cleaning arc discharge as computed by the means for computing.

7. The apparatus as recited in claim 5 or 6, wherein melting the end faces of the fibers with a pre-arcing function, and which has a function which can be controlled to deform the fiber core and mode field diameter (MFD) of the fiber in the vicinity of the end faces of the fibers so as to be different from that of the other part of the fiber before fusion splicing to achieve the specific splice loss.

8. The apparatus as recited in claim 7 further comprising:

a means for computing the characteristics of the prearcing discharge required to deform the fiber core and mode field diameter (MFD) in the vicinity of the end faces of the fibers before fusion splicing to an amount determined on the basis of a correlation that exists between the amount of deformation of the fiber end faces and the splice loss, and

a means for adjusting the characteristics of the prearcing discharge as computed by the means for computing.

9. An optical fixed attenuator formed by fusion splicing ends of two optical fibers to each other and disposed in an optical signal transmission line so as to manage light intensity of an optical signal being transmitted in the optical signal transmission lines to a constant value, wherein the optical fixed attenuator is formed by fusion splicing said ends of two optical fibers to each other, each said end being deformed in advance so that a mode field diameter of each said end is different from a mode field diameter of a portion of the optical fiber except said end, and quantity of the deformation of said end introduced in advance is set to be a quantity required to attain a specific attenuation after the fusion splicing.

10. A method for producing an optical fixed attenuator comprising:

an electric discharge step for removing dust adhered on each end surface and its vicinity of two optical fibers before ends of the two optical fibers are fusion spliced to each other so as to form the optical

fixed attenuator, wherein quantity of the electric discharge for removing dust is controlled to be a quantity required to deform said end of the optical fiber in advance so that a mode field diameter of each said end of the optical fiber is different from a mode field diameter of a portion of the optical fiber except said end and each said end is deformed with a quantity of deformation required to attain a specific attenuation after the fusion splicing between said ends of the optical fibers.

11. A Method for producing an optical fixed attenuator comprising:

a preheating step for melting ends of two optical fibers before said ends of the two optical fibers are fusion spliced to each other so as to form the optical fixed attenuator, wherein quantity of the preheating is controlled to be a quantity required to deform said end of the optical fiber in advance so that a mode field diameter of each said end of the optical fiber is different from a mode field diameter of a portion of the optical fiber except said end and each said end is deformed with a quantity of deformation required to attain a specific attenuation after the fusion splicing between said ends of the optical fibers.

12. The method for producing an optical fixed attenuator according to claim 10, wherein the quantity of deformation required to attain a specific attenuation is computed on the basis of a correlation between a quantity of deformation of said end calculated in advance and an attenuation due to the fusion splicing for a spliced part of said ends.

13. The method for producing an optical fixed attenuator according to claim 11, wherein the quantity of deformation required to attain a specific attenuation is computed on the basis of a correlation between a quantity of deformation of said end calculated in advance and an attenuation due to the fusion splicing for a spliced part of said ends.

14. An apparatus for producing an optical fixed attenuator, by which an electric discharge is carried out for removing dust adhered on each end surface and its vicinity of two optical fibers, and thereafter ends of the two optical fibers are fusion spliced to each other so as to form the optical fixed attenuator, wherein quantity of the electric discharge for removing dust is set adjustable in a range including at least a quantity required to deform each said end of the optical fiber in advance so that a mode field diameter of each said end of the optical fiber is different from a mode field diameter of a portion of the optical fiber except said end and each said end is deformed with a quantity of deformation required to attain a specific attenuation after the fusion splicing between said ends of the optical fibers.

15. The apparatus for producing an optical fixed attenuator according to claim 14 comprising:

first computing means for computing the quantity of the electric discharge for removing dust required to deform said each end of the optical fiber with the quantity of deformation required to attain the specific attenuation on the basis of a correlation between a quantity of deformation of said end calculated in advance and an attenuation due to

the fusion splicing for a fusion spliced part of said ends; and

first adjusting means for adjusting quantity of the electric discharge for removing dust to the quantity of the electric discharge computed by the first computing means.

16. An apparatus for producing an optical fixed attenuator, by which a preheating is carried out for melting ends of two optical fibers before said ends of the two optical fibers are fusion spliced to each other so as to form the optical fixed attenuator, wherein quantity of the preheating is set adjustable in a range including at least a quantity required to deform said end of the optical fiber in advance so that a mode field diameter of each said end of the optical fiber is different from a mode field diameter of a portion of the optical fiber except said end and each said end is deformed with a quantity of deformation required to attain a specific attenuation after the fusion splicing between said ends of the optical fibers.

17. The apparatus for producing an optical fixed attenuator according to claim 16 comprising:

second computing means for computing the quantity of the preheating required to deform said end of the optical fiber with the quantity of deformation required to attain the specific attenuation on the basis of a correlation between a quantity of deformation of said end calculated in advance and an attenuation due to the fusion splicing for a fusion spliced part of said ends; and

second adjusting means for adjusting said quantity required to

deform said end of the optical fiber in advance to the quantity of the preheating computed by the second computing means.